

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
United States Patent and Trademark  
Office  
Box PCT  
Washington, D.C.20231  
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

|  |  |
|--|--|
| Date of mailing:<br>09 December 1999 (09.12.99)      |  |
| International application No.:<br>PCT/JP99/02679     | Applicant's or agent's file reference:<br>P99-15 |
| International filing date:<br>20 May 1999 (20.05.99) | Priority date:<br>03 June 1998 (03.06.98)        |
| Applicant:<br>ICHIHARA, Kazuyoshi et al              |  |

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International preliminary Examining Authority on:  
01 September 1999 (01.09.99)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

|   |   |
|---|---|
| The International Bureau of WIPO<br>34, chemin des Colombettes<br>1211 Geneva 20, Switzerland<br>Facsimile No.: (41-22) 740.14.35 | Authorized officer:<br><br>J. Zahra<br>Telephone No.: (41-22) 338.83.38 |
|---|---|

Translation

PATENT COOPERATION ATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

|  |   |   |
|--|---|---|
| Applicant's or agent's file reference<br>P99-15  | <b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |   |
| International application No.<br>PCT/JP99/02679  | International filing date (day/month/year)<br>20 May 1999 (20.05.99)  | Priority date (day/month/year)<br>03 June 1998 (03.06.98) |
| International Patent Classification (IPC) or national classification and IPC<br>C07C 53/21, 51/235 |   |   |
| Applicant<br>DAIKIN INDUSTRIES, LTD.   |   |   |

|   |
|---|
| <p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>3</u> sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of <u>2</u> sheets.</p>   |
| <p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p> |

|  |  |
|--|--|
| Date of submission of the demand<br>01 September 1999 (01.09.99) | Date of completion of this report<br>28 February 2000 (28.02.2000) |
| Name and mailing address of the IPEA/JP                          | Authorized officer   |
| Facsimile No.  | Telephone No.  |

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP99/02679

## I. Basis of the report

1. With regard to the **elements** of the international application:\*

- ☐ the international application as originally filed
- ☒ the description:  
pages 1-12, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☒ the claims:  
pages 2-4, as originally filed  
pages \_\_\_\_\_, as amended (together with any statement under Article 19  
pages \_\_\_\_\_, filed with the demand  
pages 1,6, filed with the letter of 21 January 2000 (21.01.2000)
- ☐ the drawings:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☒ the claims, Nos. 5
- ☐ the drawings, sheets/fig \_\_\_\_\_

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP99/02679

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

|                               |        |       |     |
|-------------------------------|--------|-------|-----|
| Novelty (N)                   | Claims | 1-4,6 | YES |
|                               | Claims |       | NO  |
| Inventive step (IS)           | Claims | 1-4,6 | YES |
|                               | Claims |       | NO  |
| Industrial applicability (IA) | Claims | 1-4,6 | YES |
|                               | Claims |       | NO  |

### 2. Citations and explanations

Looking at past art, in particular the documents of prior art cited in box C 'Documents considered to be relevant' in the ISR, there is no prior art that relates to the subject matter of claims 1-4 and 6 of the present application. Moreover, it is considered that it would not be obvious to a specialist in the technical field in question that, when oxidizing the fluoroalkyl alcohol represented by the general formula  $RfCH_2OH$  (where  $Rf$  is  $C_{1-16}$  fluoroalkyl) using nitric acid, by feeding oxygen into the reaction system during the oxidation reaction under a state where the amount of nitric acid fed in relative to the amount of the reacting substrate is less than the stoichiometric amount, an excellent effect results whereby the fluoroalkylcarboxylic acid represented by the general formula  $RfCOOH$  (where  $Rf$  is as above) can be manufactured with high selectivity.

Furthermore, the fluoroalkylcarboxylic acid obtained through the process disclosed in claims 1-4 and 6 of the present application can be used as a raw material for things like surfactants, medical drugs and agrochemicals.

It is thus considered that the subject matter of claims 1-4 and 6 of the present application is novel, involves an inventive step, and has industrial applicability.

# PCT

## REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference  
(if desired) (12 characters maximum)

P99-15

### Box No. I TITLE OF INVENTION

PROCESS FOR PRODUCING FLUOROALKYLCARBOXYLIC ACID

### Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

Name : DAIKIN INDUSTRIES, LTD.

Address : Umeda Center Building, 4-12,  
Nakazaki-nishi 2-chome, Kita-ku,  
Osaka-shi, Osaka 530-8323, Japan

☐ This person is also inventor.

Telephone No.

Facsimile No.

Teleprinter No.

State (that is, country) of nationality:

JAPAN

State (that is, country) of residence:

JAPAN

This person is applicant  
for the purposes of:

☐ all designated  
States

☒ all designated States except  
the United States of America

☐ the United States  
of America only

☐ the States indicated in  
the Supplemental Box

### Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

Name : ICHIHARA Kazuyoshi

Address : c/o Yodogawa Seisakusho,  
DAIKIN INDUSTRIES, LTD., 1-1,  
Nishihitotsuya, Settsu-shi, Osaka  
566-0044, Japan

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (If this check-box  
is marked, do not fill in below.)

State (that is, country) of nationality:

JAPAN

State (that is, country) of residence:

JAPAN

This person is applicant  
for the purposes of:

☐ all designated  
States

☐ all designated States except  
the United States of America

☒ the United States  
of America only

☐ the States indicated in  
the Supplemental Box

☒ Further applicants and/or (further) inventors are indicated on a continuation sheet.

### Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

☒ agent

☐ common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

Name : SAEGUSA Eiji Registration Number : 6521

Address : Kitahama TNK Building, 1-7-1, Doshomachi,  
Chuo-ku, Osaka-shi, Osaka 541-0045, Japan

Telephone No.

06-6203-0941

Facsimile No.

06-6222-1068

Teleprinter No.

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

## Continuation of Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

*If none of the following sub-boxes is used, this sheet should not be included in the request.*

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

Name : AOYAMA Hirokazu

Address : c/o Yodogawa Seisakusho,  
DAIKIN INDUSTRIES, LTD., 1-1,  
Nishihitotsuya, Settsu-shi, Osaka  
566-0044, Japan

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality: JAPAN

State (that is, country) of residence: JAPAN

This person is applicant for the purposes of:

☐ all designated States

☐ all designated States except the United States of America

☒ the United States of America only

☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

☐ applicant only

☐ applicant and inventor

☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

☐ all designated States

☐ all designated States except the United States of America

☐ the United States of America only

☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

☐ applicant only

☐ applicant and inventor

☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

☐ all designated States

☐ all designated States except the United States of America

☐ the United States of America only

☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

☐ applicant only

☐ applicant and inventor

☐ inventor only (If this check-box is marked, do not fill in below.)

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

☐ all designated States

☐ all designated States except the United States of America

☐ the United States of America only

☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on an other continuation sheet.

**Box No.V DESIGNATION OF STATES**

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

**Regional Patent**

- ☐ **AP ARIPO Patent:** GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SL Sierra Leone, SZ Swaziland, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☐ **EA Eurasian Patent:** AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ **EP European Patent:** AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☐ **OA OAPI Patent:** BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line) .....

**National Patent (if other kind of protection or treatment desired, specify on dotted line):**

- |  |  |
|--|--|
| <input type="checkbox"/> <b>AE</b> United Arab Emirates                  | <input type="checkbox"/> <b>LR</b> Liberia                                   |
| <input type="checkbox"/> <b>AL</b> Albania                               | <input type="checkbox"/> <b>LS</b> Lesotho                                   |
| <input type="checkbox"/> <b>AM</b> Armenia                               | <input type="checkbox"/> <b>LT</b> Lithuania                                 |
| <input type="checkbox"/> <b>AT</b> Austria                               | <input type="checkbox"/> <b>LU</b> Luxembourg                                |
| <input type="checkbox"/> <b>AU</b> Australia                             | <input type="checkbox"/> <b>LV</b> Latvia                                    |
| <input type="checkbox"/> <b>AZ</b> Azerbaijan                            | <input type="checkbox"/> <b>MD</b> Republic of Moldova                       |
| <input type="checkbox"/> <b>BA</b> Bosnia and Herzegovina                | <input type="checkbox"/> <b>MG</b> Madagascar                                |
| <input type="checkbox"/> <b>BB</b> Barbados                              | <input type="checkbox"/> <b>MK</b> The former Yugoslav Republic of Macedonia |
| <input type="checkbox"/> <b>BG</b> Bulgaria                              |  |
| <input type="checkbox"/> <b>BR</b> Brazil                                | <input type="checkbox"/> <b>MN</b> Mongolia                                  |
| <input type="checkbox"/> <b>BY</b> Belarus                               | <input type="checkbox"/> <b>MW</b> Malawi                                    |
| <input type="checkbox"/> <b>CA</b> Canada                                | <input type="checkbox"/> <b>MX</b> Mexico                                    |
| <input type="checkbox"/> <b>CH and LI</b> Switzerland and Liechtenstein  | <input type="checkbox"/> <b>NO</b> Norway                                    |
| <input type="checkbox"/> <b>CN</b> China                                 | <input type="checkbox"/> <b>NZ</b> New Zealand                               |
| <input type="checkbox"/> <b>CU</b> Cuba                                  | <input type="checkbox"/> <b>PL</b> Poland                                    |
| <input type="checkbox"/> <b>CZ</b> Czech Republic                        | <input type="checkbox"/> <b>PT</b> Portugal                                  |
| <input type="checkbox"/> <b>DE</b> Germany                               | <input type="checkbox"/> <b>RO</b> Romania                                   |
| <input type="checkbox"/> <b>DK</b> Denmark                               | <input type="checkbox"/> <b>RU</b> Russian Federation                        |
| <input type="checkbox"/> <b>EE</b> Estonia                               | <input type="checkbox"/> <b>SD</b> Sudan                                     |
| <input type="checkbox"/> <b>ES</b> Spain                                 | <input type="checkbox"/> <b>SE</b> Sweden                                    |
| <input type="checkbox"/> <b>FI</b> Finland                               | <input type="checkbox"/> <b>SG</b> Singapore                                 |
| <input type="checkbox"/> <b>GB</b> United Kingdom                        | <input type="checkbox"/> <b>SI</b> Slovenia                                  |
| <input type="checkbox"/> <b>GD</b> Grenada                               | <input type="checkbox"/> <b>SK</b> Slovakia                                  |
| <input type="checkbox"/> <b>GE</b> Georgia                               | <input type="checkbox"/> <b>SL</b> Sierra Leone                              |
| <input type="checkbox"/> <b>GH</b> Ghana                                 | <input type="checkbox"/> <b>TJ</b> Tajikistan                                |
| <input type="checkbox"/> <b>GM</b> Gambia                                | <input type="checkbox"/> <b>TM</b> Turkmenistan                              |
| <input type="checkbox"/> <b>HR</b> Croatia                               | <input type="checkbox"/> <b>TR</b> Turkey                                    |
| <input type="checkbox"/> <b>HU</b> Hungary                               | <input type="checkbox"/> <b>TT</b> Trinidad and Tobago                       |
| <input type="checkbox"/> <b>ID</b> Indonesia                             | <input type="checkbox"/> <b>UA</b> Ukraine                                   |
| <input type="checkbox"/> <b>IL</b> Israel                                | <input type="checkbox"/> <b>UG</b> Uganda                                    |
| <input type="checkbox"/> <b>IN</b> India                                 | <input checked="" type="checkbox"/> <b>US</b> United States of America       |
| <input type="checkbox"/> <b>IS</b> Iceland                               |  |
| <input checked="" type="checkbox"/> <b>JP</b> Japan                      | <input type="checkbox"/> <b>UZ</b> Uzbekistan                                |
| <input type="checkbox"/> <b>KE</b> Kenya                                 | <input type="checkbox"/> <b>VN</b> Viet Nam                                  |
| <input type="checkbox"/> <b>KG</b> Kyrgyzstan                            | <input type="checkbox"/> <b>YU</b> Yugoslavia                                |
| <input type="checkbox"/> <b>KP</b> Democratic People's Republic of Korea | <input type="checkbox"/> <b>ZA</b> South Africa                              |
|  | <input type="checkbox"/> <b>ZW</b> Zimbabwe                                  |
| <input type="checkbox"/> <b>KR</b> Republic of Korea                     |  |
| <input type="checkbox"/> <b>KZ</b> Kazakhstan                            |  |
| <input type="checkbox"/> <b>LC</b> Saint Lucia                           |  |
| <input type="checkbox"/> <b>LK</b> Sri Lanka                             |  |

Check-boxes reserved for designating States which have become party to the PCT after issuance of this sheet:

**Precautionary Designation Statement:** In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)

**Supplemental Box***If the Supplemental Box is not used, this sheet should not be included in the request.*

1. If, in any of the Boxes, the space is insufficient to furnish all the information: in such case, write "Continuation of Box No. ..." [indicate the number of the Box] and furnish the information in the same manner as required according to the captions of the Box in which the space was insufficient, in particular:

- (i) if more than two persons are involved as applicants and/or inventors and no "continuation sheet" is available: in such case, write "Continuation of Box No. III" and indicate for each additional person the same type of information as required in Box No. III. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below;
- (ii) if, in Box No. II or in any of the sub-boxes of Box No. III, the indication "the States indicated in the Supplemental Box" is checked: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the applicant(s) involved and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is applicant;
- (iii) if, in Box No. II or in any of the sub-boxes of Box No. III, the inventor or the inventor/applicant is not inventor for the purposes of all designated States or for the purposes of the United States of America: in such case, write "Continuation of Box No. II" or "Continuation of Box No. III" or "Continuation of Boxes No. II and No. III" (as the case may be), indicate the name of the inventor(s) and, next to (each) such name, the State(s) (and/or, where applicable, ARIPO, Eurasian, European or OAPI patent) for the purposes of which the named person is inventor;
- (iv) if, in addition to the agent(s) indicated in Box No. IV, there are further agents: in such case, write "Continuation of Box No. IV" and indicate for each further agent the same type of information as required in Box No. IV;
- (v) if, in Box No. V, the name of any State (or OAPI) is accompanied by the indication "patent of addition," or "certificate of addition," or if, in Box No. V, the name of the United States of America is accompanied by an indication "continuation" or "continuation-in-part": in such case, write "Continuation of Box No. V" and the name of each State involved (or OAPI), and after the name of each such State (or OAPI), the number of the parent title or parent application and the date of grant of the parent title or filing of the parent application;
- (vi) if, in Box No. VI, there are more than three earlier applications whose priority is claimed: in such case, write "Continuation of Box No. VI" and indicate for each additional earlier application the same type of information as required in Box No. VI;
- (vii) if, in Box No. VI, the earlier application is an ARIPO application: in such case, write "Continuation of Box No. VI", specify the number of the item corresponding to that earlier application and indicate at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed.

2. If, with regard to the precautionary designation statement contained in Box No. V, the applicant wishes to exclude any State(s) from the scope of that statement: in such case, write "Designation(s) excluded from precautionary designation statement" and indicate the name or two-letter code of each State so excluded.

3. If the applicant claims, in respect of any designated Office, the benefits of provisions of the national law concerning non-prejudicial disclosures or exceptions to lack of novelty: in such case, write "Statement concerning non-prejudicial disclosures or exceptions to lack of novelty" and furnish that statement below.

CONTINUATION OF BOX NO. IV

Name : KAKEHI Hiromichi

Registration Number : 7651

The same address as box IV

Name : OHARA Takeshi

Registration Number : 8642

The same address as box IV



| <b>Box No. VI PRIORITY CLAIM</b>   |                                       | <input type="checkbox"/> Further priority claims are indicated in the Supplemental Box.   |  |  |
|--|---------------------------------------|---|--|--|
| Filing date<br>of earlier application<br>(day/month/year)  | Number<br>of earlier application      | Where earlier application is:   |  |  |
|  |                                       | national application:<br>country  | regional application:<br>regional Office | international application:<br>receiving Office |
| item (1) 03.06.1998<br>(03 June, 1998)   | Patent Application<br>No. 1998-154507 | Japan   |  |  |
| item (2)   |                                       |   |  |  |
| item (3)   |                                       |   |  |  |
| <input type="checkbox"/> The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s): |                                       |   |  |  |
| <i>* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.</i>  |                                       |   |  |  |
| <b>Box No. VII INTERNATIONAL SEARCHING AUTHORITY</b>   |                                       |   |  |  |
| Choice of International Searching Authority (ISA)<br>(if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):   |                                       | Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):<br>Date (day/month/year)      Number      Country (or regional Office)   |  |  |
| ISA / JP.  |                                       |   |  |  |
| <b>Box No. VIII CHECK LIST; LANGUAGE OF FILING</b>   |                                       |   |  |  |
| This international application contains the following number of sheets:<br>request : 5<br>description (excluding sequence listing part) : 12<br>claims : 1<br>abstract : 1<br>drawings :<br>sequence listing part of description :<br>Total number of sheets : 19  |                                       | This international application is accompanied by the item(s) marked below:<br>1. <input checked="" type="checkbox"/> fee calculation sheet<br>2. <input checked="" type="checkbox"/> separate signed power of attorney<br>3. <input type="checkbox"/> copy of general power of attorney; reference number, if any:<br>4. <input type="checkbox"/> statement explaining lack of signature<br>5. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s):<br>6. <input type="checkbox"/> translation of international application into (language):<br>7. <input type="checkbox"/> separate indications concerning deposited microorganism or other biological material<br>8. <input type="checkbox"/> nucleotide and/or amino acid sequence listing in computer readable form<br>9. <input type="checkbox"/> other (specify): |  |  |
| Figure of the drawings which should accompany the abstract:  |                                       | Language of filing of the international application: Japanese   |  |  |
| <b>Box No. IX SIGNATURE OF APPLICANT OR AGENT</b>  |                                       |   |  |  |
| Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).   |                                       |   |  |  |
| SAEGUSA Eiji   |                                       | KAKEHI Hiromichi  |  | OHARA Takeshi                                  |
| Seal   |                                       | Seal  |  | Seal   |

|   |  |
|---|--|
| For receiving Office use only   |  |
| 1. Date of actual receipt of the purported international application:   | 2. Drawings:<br><input type="checkbox"/> received:<br><input type="checkbox"/> not received: |
| 3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application: |  |
| 4. Date of timely receipt of the required corrections under PCT Article 11(2):  |  |
| 5. International Searching Authority (if two or more are competent): ISA / JP   |  |
| 6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid.  |  |

|   |
|---|
| For International Bureau use only                               |
| Date of receipt of the record copy by the International Bureau: |

## 国際調査報告

(法 8 条、法施行規則第40、41条)  
〔P C T 1 8 条、P C T 規則43、44〕

|                                       |  |                                |
|---------------------------------------|--|--------------------------------|
| 出願人又は代理人<br>の書類記号 P 9 9 - 1 5         | 今後の手続きについては、国際調査報告の送付通知様式(P C T / I S A / 2 2 0 )<br>及び下記 5 を参照すること。 |                                |
| 国際出願番号<br>P C T / J P 9 9 / 0 2 6 7 9 | 国際出願日<br>(日.月.年) 2 0 . 0 5 . 9 9                                     | 優先日<br>(日.月.年) 0 3 . 0 6 . 9 8 |
| 出願人 (氏名又は名称)<br>ダイキン工業株式会社            |  |                                |

国際調査機関が作成したこの国際調査報告を法施行規則第41条 ( P C T 1 8 条 ) の規定に従い出願人に送付する。  
この写しは国際事務局にも送付される。

この国際調査報告は、全部で 3 ページである。

☐ この調査報告に引用された先行技術文献の写しも添付されている。

## 1. 国際調査報告の基礎

a. 言語は、下記に示す場合を除くほか、この国際出願がされたものに基づき国際調査を行った。

☐ この国際調査機関に提出された国際出願の翻訳文に基づき国際調査を行った。

b. この国際出願は、ヌクレオチド又はアミノ酸配列を含んでおり、次の配列表に基づき国際調査を行った。

☐ この国際出願に含まれる書面による配列表

☐ この国際出願と共に提出されたフレキシブルディスクによる配列表

☐ 出願後に、この国際調査機関に提出された書面による配列表

☐ 出願後に、この国際調査機関に提出されたフレキシブルディスクによる配列表

☐ 出願後に提出した書面による配列表が出願時における国際出願の開示の範囲を超える事項を含まない旨の陳述書の提出があった。

☐ 書面による配列表に記載した配列とフレキシブルディスクによる配列表に記録した配列が同一である旨の陳述書の提出があった。

2. ☐ 請求の範囲の一部の調査ができない (第 I 欄参照)。

3. ☐ 発明の単一性が欠如している (第 II 欄参照)。

4. 発明の名称は ☒ 出願人が提出したものを承認する。

☐ 次に示すように国際調査機関が作成した。

5. 要約は ☒ 出願人が提出したものを承認する。

☐ 第 III 欄に示されているように、法施行規則第47条 ( P C T 規則38. 2 ( b ) ) の規定により国際調査機関が作成した。出願人は、この国際調査報告の発送の日から 1 カ月以内にこの国際調査機関に意見を提出することができる。

6. 要約書とともに公表される図は、

第 \_\_\_\_\_ 図とする。 ☐ 出願人が示したとおりである。

☒ なし

☐ 出願人は図を示さなかった。

☐ 本図は発明の特徴を一層よく表している。

## A. 発明の属する分野の分類 (国際特許分類 (IPC))

Int. Cl.<sup>°</sup> C07C53/21, 51/235

## B. 調査を行った分野

調査を行った最小限資料 (国際特許分類 (IPC))

Int. Cl.<sup>°</sup> C07C53/21, 51/235

最小限資料以外の資料で調査を行った分野に含まれるもの

国際調査で使用した電子データベース (データベースの名称、調査に使用した用語)

CAPLUS (STN), REGISTRY (STN), WPIDS (STN), BEILSTEIN (STN)

## C. 関連すると認められる文献

| 引用文献の<br>カテゴリー* | 引用文献名 及び一部の箇所が関連するときは、その関連する箇所の表示   | 関連する<br>請求の範囲の番号   |
|-----------------|---|--------------------|
| X;<br>Y;<br>A   | US, 2559629, A (E. I. du Pont de Nemours & Company), 10. 7月. 1951<br>(10. 07. 51), Example VII (ファミリーなし)                  | 1;<br>2-4;<br>5, 6 |
| Y               | JP, 5-78277, A (株式会社日鉱共石) 30. 3月. 1993 (30. 03. 93), 請求項1-<br>3, [0008] - [0009] (ファミリーなし)                                | 2-4                |
| Y               | JP, 6-256254, A (株式会社ジャパソナバー) 13. 9月. 1994 (13. 09. 94), 請求<br>項1, [0011] (ファミリーなし)                                       | 2-4                |
| A               | JP, 10-502049, A (スピダ, イーナ・ペトロヴ) 24. 2月. 1998 (24. 02. 98), 請求<br>項1 & WO, 93/12059, A1 & EP, 635468, A1 & US, 5495034, A | 1-6                |

☒ C欄の続きにも文献が列挙されている。☐ パテントファミリーに関する別紙を参照。

## \* 引用文献のカテゴリー

「A」 特に関連のある文献ではなく、一般的技術水準を示すもの

「E」 国際出願日前の出願または特許であるが、国際出願日以後に公表されたもの

「L」 優先権主張に疑義を提起する文献又は他の文献の発行日若しくは他の特別な理由を確立するために引用する文献 (理由を付す)

「O」 口頭による開示、使用、展示等に言及する文献

「P」 国際出願日前で、かつ優先権の主張の基礎となる出願

の日の後に公表された文献

「T」 国際出願日又は優先日後に公表された文献であって出願と矛盾するものではなく、発明の原理又は理論の理解のために引用するもの

「X」 特に関連のある文献であって、当該文献のみで発明の新規性又は進歩性がないと考えられるもの

「Y」 特に関連のある文献であって、当該文献と他の1以上の文献との、当業者にとって自明である組合せによって進歩性がないと考えられるもの

「&amp;」 同一パテントファミリー文献

国際調査を完了した日

15. 06. 99

国際調査報告の発送日

29.06.99

国際調査機関の名称及びあて先

日本国特許庁 (ISA/J P)

郵便番号 100-8915

東京都千代田区霞が関三丁目4番3号

特許庁審査官 (権限のある職員)

唐木 以知良

4 H

8018

電話番号 03-3581-1101 内線 3443

| C (続き) . 関連すると認められる文献 |  |                  |
|-----------------------|--|------------------|
| 引用文献の<br>カテゴリー*       | 引用文献名 及び一部の箇所が関連するときは、その関連する箇所の表示  | 関連する<br>請求の範囲の番号 |
| A                     | JP, 61-293948, A (ヘキスト アクチエンゲゼルシャフト) 24. 12月. 1986 (24. 12. 86), 請求項1 & EP, 206054, A2 & DE, 3522032, A1 & HU, 44476, A & CA, 1268187, A1 & US, 4976893, A | 1-6              |
| A                     | US, 2557282, A (E. I. du Pont de Nemours & Company), 19. 6月. 1951 (19. 06. 51), 第5欄第48行-第6欄第67行 (ファミリーなし)  | 1-6              |

P C T

## 国際予備審査報告

(法第12条、法施行規則第56条)  
〔PCT36条及びPCT規則70〕

REC'D 17 MAR 2000

WIPO PCT

|  |  |                                |
|--|--|--------------------------------|
| 出願人又は代理人<br>の書類記号 P 9 9 - 1 5  | 今後の手続きについては、国際予備審査報告の送付通知（様式PCT/<br>I P E A / 4 1 6）を参照すること。 |                                |
| 国際出願番号<br>P C T / J P 9 9 / 0 2 6 7 9                                      | 国際出願日<br>(日.月.年) 2 0 . 0 5 . 9 9                             | 優先日<br>(日.月.年) 0 3 . 0 6 . 9 8 |
| 国際特許分類 (I P C)<br>I n t . C l <sup>7</sup> C 0 7 C 5 3 / 2 1 , 5 1 / 2 3 5 |  |                                |
| 出願人 (氏名又は名称)<br>ダイキン工業株式会社   |  |                                |

- 国際予備審査機関が作成したこの国際予備審査報告を法施行規則第57条（PCT36条）の規定に従い送付する。
- この国際予備審査報告は、この表紙を含めて全部で 3 ページからなる。  
☒ この国際予備審査報告には、附属書類、つまり補正されて、この報告の基礎とされた及び／又はこの国際予備審査機関に対してした訂正を含む明細書、請求の範囲及び／又は図面も添付されている。  
(PCT規則70.16及びPCT実施細則第607号参照)  
この附属書類は、全部で 2 ページである。
- この国際予備審査報告は、次の内容を含む。
  - ☒ 国際予備審査報告の基礎
  - ☐ 優先権
  - ☐ 新規性、進歩性又は産業上の利用可能性についての国際予備審査報告の不作成
  - ☐ 発明の単一性の欠如
  - ☒ PCT35条(2)に規定する新規性、進歩性又は産業上の利用可能性についての見解、それを裏付けるための文献及び説明
  - ☐ ある種の引用文献
  - ☐ 国際出願の不備
  - ☐ 国際出願に対する意見

|  |                                   |             |
|--|-----------------------------------|-------------|
| 国際予備審査の請求書を受理した日<br>0 1 . 0 9 . 9 9                                    | 国際予備審査報告を作成した日<br>2 8 . 0 2 . 0 0 |             |
| 名称及びあて先<br>日本国特許庁 (I P E A / J P)<br>郵便番号100-8915<br>東京都千代田区霞が関三丁目4番3号 | 特許庁審査官 (権限のある職員)<br>唐木 以知良 印      | 4 H 8 0 1 8 |
| 電話番号 0 3 - 3 5 8 1 - 1 1 0 1 内線 3 4 4 3                                |                                   |             |

## 1. 国際予備審査報告の基礎

1. この国際予備審査報告は下記の出願書類に基づいて作成された。(法第6条(PCT14条)の規定に基づく命令に応答するために提出された差し替え用紙は、この報告書において「出願時」とし、本報告書には添付しない。PCT規則70.16, 70.17)

☐ 出願時の国際出願書類

☒ 明細書 第 1-12 ページ、 出願時に提出されたもの  
明細書 第 \_\_\_\_\_ ページ、 国際予備審査の請求書と共に提出されたもの  
明細書 第 \_\_\_\_\_ ページ、 \_\_\_\_\_ 付の書簡と共に提出されたもの

☒ 請求の範囲 第 2-4 項、 出願時に提出されたもの  
請求の範囲 第 \_\_\_\_\_ 項、 PCT19条の規定に基づき補正されたもの  
請求の範囲 第 \_\_\_\_\_ 項、 国際予備審査の請求書と共に提出されたもの  
請求の範囲 第 1, 6 項、 21.01.00 付の書簡と共に提出されたもの

☐ 図面 第 \_\_\_\_\_ ページ/図、 出願時に提出されたもの  
図面 第 \_\_\_\_\_ ページ/図、 国際予備審査の請求書と共に提出されたもの  
図面 第 \_\_\_\_\_ ページ/図、 \_\_\_\_\_ 付の書簡と共に提出されたもの

☐ 明細書の配列表の部分 第 \_\_\_\_\_ ページ、 出願時に提出されたもの  
明細書の配列表の部分 第 \_\_\_\_\_ ページ、 国際予備審査の請求書と共に提出されたもの  
明細書の配列表の部分 第 \_\_\_\_\_ ページ、 \_\_\_\_\_ 付の書簡と共に提出されたもの

2. 上記の出願書類の言語は、下記に示す場合を除くほか、この国際出願の言語である。

上記の書類は、下記の言語である \_\_\_\_\_ 語である。

- ☐ 国際調査のために提出されたPCT規則23.1(b)にいう翻訳文の言語  
☐ PCT規則48.3(b)にいう国際公開の言語  
☐ 国際予備審査のために提出されたPCT規則55.2または55.3にいう翻訳文の言語

3. この国際出願は、ヌクレオチド又はアミノ酸配列を含んでおり、次の配列表に基づき国際予備審査報告を行った。

- ☐ この国際出願に含まれる書面による配列表  
☐ この国際出願と共に提出されたフレキシブルディスクによる配列表  
☐ 出願後に、この国際予備審査(または調査)機関に提出された書面による配列表  
☐ 出願後に、この国際予備審査(または調査)機関に提出されたフレキシブルディスクによる配列表  
☐ 出願後に提出した書面による配列表が出願時における国際出願の開示の範囲を超える事項を含まない旨の陳述書の提出があった  
☐ 書面による配列表に記載した配列とフレキシブルディスクによる配列表に記録した配列が同一である旨の陳述書の提出があった。

4. 補正により、下記の書類が削除された。

☐ 明細書 第 \_\_\_\_\_ ページ  
☒ 請求の範囲 第 5 項  
☐ 図面 図面の第 \_\_\_\_\_ ページ/図

5. ☐ この国際予備審査報告は、補充欄に示したように、補正が出願時における開示の範囲を越えてされたものと認められるので、その補正がされなかったものとして作成した。(PCT規則70.2(c) この補正を含む差し替え用紙は上記1.における判断の際に考慮しなければならず、本報告に添付する。)

V. 新規性、進歩性又は産業上の利用可能性についての法第12条(PCT35条(2))に定める見解、それを裏付ける文献及び説明

1. 見解

|               |       |        |   |
|---------------|-------|--------|---|
| 新規性(N)        | 請求の範囲 | 1-4, 6 | 有 |
|               | 請求の範囲 |        | 無 |
| 進歩性(IS)       | 請求の範囲 | 1-4, 6 | 有 |
|               | 請求の範囲 |        | 無 |
| 産業上の利用可能性(IA) | 請求の範囲 | 1-4, 6 | 有 |
|               | 請求の範囲 |        | 無 |

2. 文献及び説明(PCT規則70.7)

この出願の請求の範囲1-4, 6に係る発明は、従来技術、特に国際調査報告における「C. 関連すると認められる文献」の項に提示された先行技術文献からみて、先行技術のうちに該当するものがなく、また、一般式 $RfCH_2OH$ (式中、 $Rf$ は炭素数1~16のフルオロアルキル基を示す)で表されるフルオロアルキルアルコールを硝酸により酸化するに際し、酸化反応途中で反応系内に酸素を仕込むことにより、反応基質に対する硝酸仕込量を化学量論量以下とした状態で、一般式 $RfCOOH$ (式中、 $Rf$ は前記と同様)で表されるフルオロアルキルカルボン酸を高い選択率で製造することができるという優れた効果を奏する点で、当該技術分野の専門家にとって自明のものでもない。

そして、この出願の請求の範囲1-4, 6に係る発明により得られるフルオロアルキルカルボン酸は、界面活性剤、医・農薬等の原料として使用することができるものである。

したがって、この出願の請求の範囲1-4, 6に係る発明は、新規性、進歩性、及び産業上の利用可能性の何れも認めることができる。

### 請 求 の 範 囲

1. (補正後) 一般式  $RfCH_2OH$  (式中、 $Rf$ は炭素数  
1 ~ 16 のフルオロアルキル基を示す) で表されるフル  
オロアルキルアルコールを硝酸により酸化することを特  
5 徴とする一般式  $RfCOOH$  (式中、 $Rf$ は前記と同様)  
で表されるフルオロアルキルカルボン酸の製造方法であ  
って、酸化反応途中に、反応系内に酸素を仕込むことを  
特徴とする方法。
2. 金属触媒の存在下で酸化することを特徴とする請求  
10 項 1 に記載の方法。
3. 金属触媒が、鉄、ニッケル、銅およびバナジウムか  
らなる群より選択される少なくとも1種の金属、該金属  
の酸化物または該金属の塩である請求項 2 に記載の方法。
4. 一般式  $RfCOOH$  (式中、 $Rf$ は前記と同様) で表  
15 されるフルオロアルキルカルボン酸を、反応開始時に反  
応系内に存在させることを特徴とする請求項 1 ~ 3 のい  
ずれか 1 項に記載の方法。
5. (削除)
6. (補正後) 反応系内に酸素を仕込み、硝酸の仕込量  
20 を、一般式  $RfCH_2OH$  (式中、 $Rf$ は前記と同様) で表  
されるフルオロアルキルアルコールに対する化学量論量  
以下にすることを特徴とする請求項 1 ~ 4 のいずれか 1



項に記載の方法。

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AMENDMENT

To: Mr. Takahiko KONDO, Commissioner of the Patent Office  
(To: Mr. Ichiro KARAKI, Examiner of the Patent Office)

1. Identification of the International Application  
PCT/JP99/02679

2. Applicant

Name: DAIKIN INDUSTRIES, LTD.  
Address : Umeda Center Building, 4-12, Nakazaki-nishi  
2-chome, Kita-ku, Osaka-shi, Osaka 530-8323  
Japan  
Country of nationality : Japan  
Country of residence : Japan

3. Agent

Name : SAEGUSA Eiji  
Address : Kitahama TNK Building, 1-7-1, Dosho-machi,  
Chuo-ku, Osaka-shi, Osaka 541-0045 Japan

4. Item to be Amended  
Claims

5. Subject Matter of Amendment  
As per the attached sheets  
Claims 1 and 6 are amended. Claim 5 is cancelled.

6. List of Attached Documents  
Amended page 13 of the Claims

-13-

CLAIMS

1. A process for producing a fluoroalkylcarboxylic acid of the formula  $RfCOOH$  wherein  $Rf$  is a  $C_{1-16}$  fluoroalkyl group, which comprises oxidizing  
5 a fluoroalkyl alcohol of the formula  $RfCH_2OH$  wherein  $Rf$  is as defined above using nitric acid.

2. The process according to claim 1 wherein the oxidation is carried out in the presence of a metal catalyst.

10 3. The process according to claim 2 wherein the metal catalyst is at least one metal selected from the group consisting of iron, nickel, copper and vanadium, or at least one oxide or salt of these metals.

4. The process according to any one of claims  
15 1-3 wherein a fluoroalkylcarboxylic acid of the formula  $RfCOOH$  wherein  $Rf$  is as defined above is present in the reaction system at the beginning of the reaction.

5. The process according to any one of claims  
20 1-4 wherein oxygen is fed into the reaction system during the reaction.

6. The process according to claim 5 wherein oxygen is fed into the reaction system to reduce the required amount of nitric acid to a stoichiometric amount or less relative to the fluoroalkyl alcohol of the formula  
25  $RfCH_2OH$  wherein  $Rf$  is as defined above.